GD2S02 – Software Engineering for Games

Product Backlog, Planning and Estimation

Overview

- Product Backlog
- User Stories
- Estimation
  - Fibonacci Technique
  - Triangulation
- Product Backlog refinement meeting
- Sprint planning meeting

Product Backlog aka Wish List!

- Prioritized list of desired functionality.
- Visible to all stakeholders.
- Any stakeholder (including the Team) can add items.
- Constantly re-prioritized by the Product Owner.
- The item at the top of the product backlog is the highest priority item. (no two items have the same priority)
- Highest priority items are moved into the Sprint Backlog at the Sprint Planning Meeting.
- Product backlog is emergent!
  - Reiterated upon during the Backlog Refinement Meeting.

Product Backlog Item (PBI)

- Often written in User Story form.
- May have item-specific acceptance criteria.
- Effort is estimated by the team, in relative units (e.g., story points)
- PBI can also include non-feature items such as 'set up production hardware', or 'research xyz options'.
- User stories are written by the project stakeholders, not the developers.

User Stories

- *A user story is a very high-level definition of a requirement. It contains just enough information for the developer to estimate the amount of effort required to implement that requirement.*
- *As a <type of user>, I want <some goal> so that <some reason>.*

Story Number	User	Story	Acceptance Criteria	Priority	Size	Status	Assigned to
Story 10	As a lecturer, I want to	provide students with interesting activities so that students have fun learning	All students are participating actively in class	1	21	In Progress	<Lecturer>
				2			
				3			

User Stories

- A user story should focus on the “WHAT” rather than the “HOW” part.
  - Think of the *Destination* rather than the *Journey*.
  - Think of the *Business Goals* rather than the *Technological Solutions.*
- A user story should go from end-to-end slicing through all the layers of the architecture.
- You can also add acceptance criteria “conditions of satisfaction” to your user stories, which are high-level acceptance tests that should be true after the user story is complete.

User Stories

- General Guideline to writing a user story is that it should conform to the INVEST acronym.
- I – Independent
- N – Negotiable
- V – Valuable
- E – Estimable
- S – Small (enough to fit in sprint)
- T – Testable.

User Stories Example:

- ***As an*** internet banking customer, ***I want*** to see a rolling balance for my everyday accounts , ***so that*** I know the balance of my account after each transaction is applied.

Acceptance Criteria Examples:

- The rolling balance is displayed
- The rolling balance is calculated for each transaction
- The balance is displayed for every transaction for the full period of time transactions are available
- The balance is not displayed if a filter has been applied

User Stories in Games:

- "As a player, I would like to have a bazooka so I can blow up tanks“
- ”As a player, I would like to change my class at any time during an online game”
- ”As a medic, I would like to be able to see the health of my allies, because it would make it easier to help injured players”

Estimation

- How do we estimate?
- What is our base for estimation?
- How do we know the estimation is accurate?
  - Absolute or relative?
- How do we validate estimations?
- If you were asked to give estimates for the heights of the buildings in Auckland city…
- Estimate your product backlog in points. Not in units of time.
- We're not asking the team 'how long will it take?'. We're asking 'how big is it?'

Estimation: Fibonacci Technique

- We can use the Fibonacci numbers as a scale for the point system.
- They are a set of numbers, where each number is the sum, of the previous two

1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987,…..

- To indicate the size of each PBI we can use the range 1-21.
- This is relative estimation.
- To make sure the scale will work, you might pick what you think is the smallest PBI. Give it a size of 1 and then estimate all other PBI relative to it.

Estimation: Consensus Estimating

- Estimate as a team. Each participant thinks of their estimate.
- Planning Poker (Scrum Poker):
  - Each team member writes their estimate on a card.
  - Everyone reveals their choice at the same time.
  - The lowest and highest estimates state their reasons.
    - May be one person sees issues or complications that others cannot see, or may be there are different understanding of the PBI.
  - This activity is repeated until a consensus is reached.

Estimation: Consensus Estimating

- When estimating by Triangulation:
  - Compare the user story to be estimated with some previously estimated stories.
  - Decide if the user story is about the same size, smaller or bigger than the previously estimated stories.
- Triangulation helps to validate the estimates!
  - Estimate by analogy
  - Start with a previously estimated and already executed user story/requirement…
  - Validate every estimate with the help of executed one
  - Hence, triangulate…

Product Backlog Refinement Meeting

Sprint Planning Meeting

- Creation of Sprint Backlog from the Product Backlog
- Which items from Product Backlog will be executed during this sprint?
  - How do we decompose these items?
  - Estimation for the items/tasks
  - Resource assignment for each task
  - Workload/resource balancing

From Product Backlog to Sprint Backlog

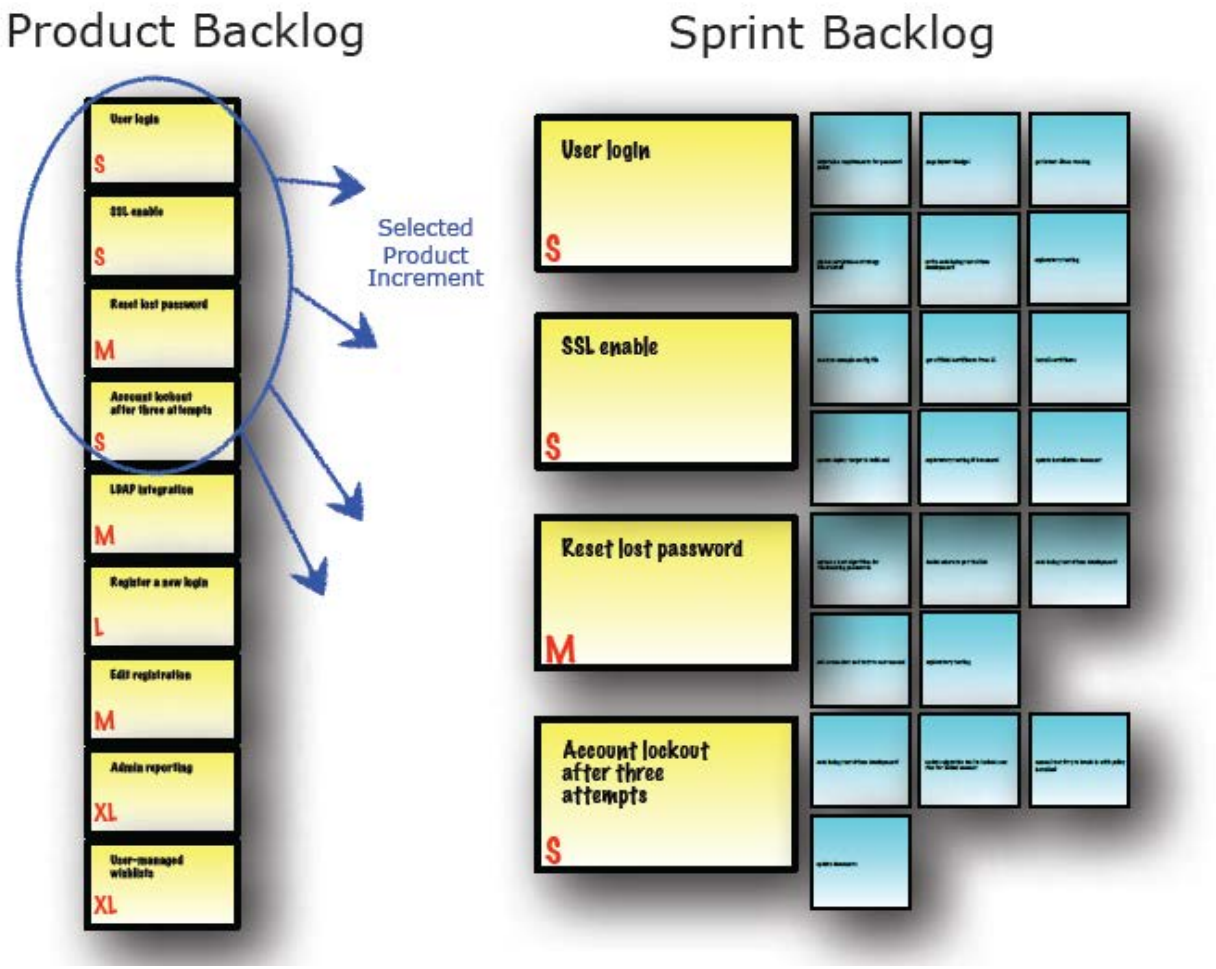

Figure Ref : Scrum Reference Card by Michael James

From Product Backlog to Sprint Backlog

Product Backlog		
Story	Priority	Points
Story10	1	13
Story8	2	8
Story24	3	8
Story7	4	5
Story1	5	13
Story18	6	2
Story20	7	5
Story21	8	3
Story22	9	13
Story23	10	2
Story13	11	3
Story4	12	13
Story5	13	13
Story6	14	8
Story2	15	8
Story3	16	5
Story11	17	3
Story25	18	2
Story14	19	8
Story9	20	13
Story15	21	8
Story12	22	5
Story16	23	5
Story17	24	3
Story19	25	2

Sprint 1 Backlog		
Story	Priority	Hours Effort
Story10	1	40
Task		8
Task		8
Task		24
Story8	2	32
Task		16
Task		8
Task		8
Story24	3	32
Task		12
Task		12
Task		8
Story7	4	24
Task		6
Task		12
Task		6
Story1	5	40
Task		4
Task		12
Task		8
Task		16

Figure Ref: 2008 Russell Pannone

- **Select highest priority stories from the product backlog to commit to during the sprint.**
- **Fine-grain the selected stories by identifying tasks that need to be done to complete the story.**
- **Estimate the hours required to complete each task and have it assigned to a person.**

From features to tasks

- Even though planning and estimation starts with features, features should be broken down to their respective tasks for more precise estimates.
  - Feature estimates are helpful for driving the project through scheduling and stay on track through iterations.
  - Task estimates are needed for work-load balancing within iterations.
  - Each feature can map to a number of tasks distributed among the team members.

At the beginning of each sprint…..

- Plan for the current sprint
- Objectives of the current sprint (todo's of the iteration) should become clear
  - To be reasonably confident that an achievable amount of work is going to be executed during the sprint
  - For the task list to be as complete as possible
  - For each team member to be at a point of knowing the overview of all tasks due in the sprint, and to contribute relevant time estimate

Sprint Planning Meeting

Summary

- Product Backlog
  - User Stories.
  - Acceptance Criteria.
- Estimation
  - Fibonacci Technique
  - Triangulation
- Sprint Backlog

References

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